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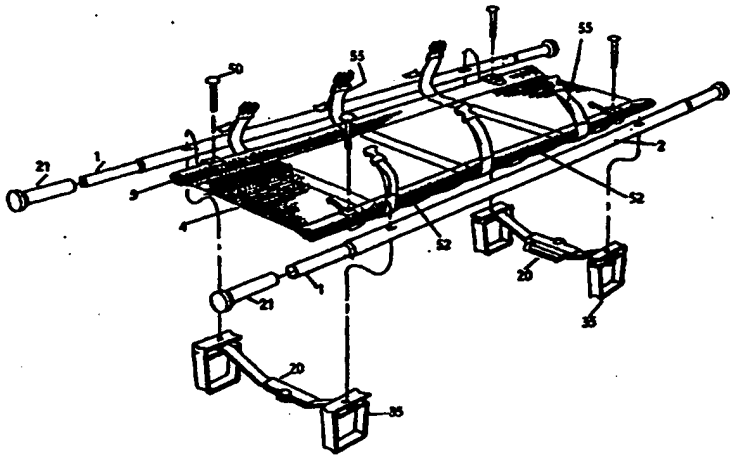
(54) Title: A FOLDING OR EXTENDIBLE STRETCHER



(57) Abstract

The stretcher has two stay joints (20) along its length. These are provided between the stretcher members (2) and are operable to maintain the stretcher rigid about the joint. The stay (20) comprises an inverted U-shaped cover (30) and a handle (23) fixed towards the apex of the inverted U cover (30). The joint (31) is located remote from the handle (23). A spring biased detent (26) is operable to engage one of the relatively movable elements (21, 22), and a button (24) is operable to release the detent so as to allow relative movement of the two elements (21, 22). The stretcher has a pair of telescopic handles (1) at each end of the stretcher. Each handle (1) is extendible from and retractable into a hollow stretcher member (2). The handles have retaining means (3, 3a) for securing the handle in one of a number of desired locations along the stretcher member (2). The retaining means comprises a spring loaded button (3) engageable in one of a number of orifices (3a) along the stretcher member (2). The button (3) and orifices (3a) are located on an inner face of the handle (1) and stretcher member (2). A keyway (14) and a guide element (15) engageable therewith are provided between the handle and stretcher member (2).

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A FOLDING OR EXTENDIBLE STRETCHER

The present invention relates to a folding or extendible stretcher.

Stretchers which are carried in ambulances or stowed away for emergency use generally are designed so that they can be made compact in overall size when not in use but which are extended to full size when required. When such a stretcher is extended to full size, it is generally expected to perform as effectively as a stretcher which is not convertible between a storage mode and a usage mode. The provision of features which enable a stretcher to be converted between one mode and another invariably results in features which either provide points of weakness in the entire structure or provide other problems of their own right.

The object of the invention is to alleviate the disadvantages associated with folding or extendible stretchers.

The present invention provides a a folding or extendible stretcher convertible between one mode and another, the stretcher having at least one foldable joint along its length forming part of a stay provided between two relatively movable elements of the stretcher and being operable to maintain the stretcher rigid about the joint, the stay comprising a substantially inverted U-shaped cover fixed to one of the movable elements, a handle provided towards the apex of the inverted U with the joint being located remote from the handle and means for releaseably connecting the cover to the other movable element.

The present invention also provides a stretcher having a

pair of telescopic handles at one end at least of the stretcher, each handle being extendible from and retractable into a hollow stretcher member, the handle having retaining means on an inner face of the handle and stretcher member for securing the handle in one of a number of desired locations along the stretcher member, thereby reducing the possibility of accidental release by anchor straps or the like.

Advantageously, a keyway and a guide element engageable therewith are provided between the handle and stretcher member so as to prevent relative non-axial movement of the handle.

Advantageously, the stretcher includes four removable feet, one adjacent each corner of the stretcher and a removable stretcher cover, whereby the feet are removable to allow the stretcher cover to be removed.

Advantageously, the free ends of the relatively movable elements remote from the joint are each permanently pivotally engaged with a foot to form a sub-assembly, with the feet being removably engaged with the hollow stretcher members by disengageable fastner elements, whereby disengagement of the fastner elements allows the removal of the sub-assembly from the members to enable the cover to be removed from the members.

Advantageously, the cover is provided with a pair of sleeves for accommodating the hollow stretcher members, and each sleeve is provided with a plurality of strap locating anchor elements.

Advantageously, the cover is provided with at least one clip and hook arrangement which are engageable when the

sleeves are brought into juxtaposition so as to retain the stretcher in a folded mode.

Advantageously, each foot is provided with a profiled surface for engagement with a member of a like stretcher in a stacked arrangement.

Advantageously, the releaseable connecting means comprises a spring biased detent operable to engage one of the relatively movable elements, and a button operable to release the detent so as to allow relative movement of the two elements.

Advantageously, the retaining means comprising a spring loaded button engageable in one of a number of orifices along the stretcher member, the button and orifices being located on an inner face of the handle and stretcher member.

The invention will hereinafter be more particularly described with reference to the accompanying drawings, which show by way of example only, one embodiment of a stretcher according to the invention.

In the drawings:

Figure 1 is an exploded perspective view of a stretcher according to the invention showing the individual components.

Figure 2 is a perspective view of a handle element removed from a hollow element of the stretcher;

Figure 2a is a side view of the handle in a retracted position engaged with the element;

Figure 2b is a side view of the handle in mid-position which is in normal use;

Figure 2c is a side view of the handle in an extended position for carrying heavy loads or where the user has large hands;

Figure 3 is a side view of the handle separate from the support element;

Figure 3a is a cross-sectional view of the handle showing the release button;

Figure 3b is a side view of a portion of the stretcher element;

Figure 4 is a side view of a stay of the stretcher with the user grasping the handle;

Figure 4a is a side view of the stay and two elements folded over about the joint of the stay;

Figure 5 is a perspective view of the stay from one side showing its operation;

Figure 5a is a perspective view of the stay from the other side thereof with two relatively movable members in rigid position;

Figure 5b is an underneath plan view of the stay;

Figure 6 is a collective view of the individual components of the stay separated one from the other;

Figure 7 is an end view of three stretchers stacked one on the other.

Figure 8 is a side view of a leg of the stretcher; and

Figure 8a is a cross-sectional end view through the leg.

Referring to the drawings and initially to Figure 1, the stretcher comprises, a pair of elongate tubes 2, which are engageable with a cover 4 through sleeves 5, two foldable stays 30,four feet 35 and four handles 1 at each end of the tubes 2.

Figures 2 to 3b show a portion of one end of the stretcher in more detail, showing the telescopic retractable handle which can be fully retracted to enable greater movability in certain restricted places such as in vehicles, or fully extended to provided for extra grip for large hands or heavy loads. Each of the four handles 1 is telescopically engageable with a tube 2 on which are provided two orifices 3a engageable by a button 3 which is spring biased into engagement with one of the orifices 3a. A keyway 14 is provided on the handle which is engageable with a guide pin 15 provided on the inner surface of the tube 2. The keyway 14 and pin 15 prevent each handle 1 from being fully withdrawn and also prevents relative rotation of the handles 1 to the tubes 2. The release button 3 for each handle 4 is on the inner side of the stretcher, thus must be accessed from inside the stretcher.

Referring to Figures 4 to 6, these show a stay 20 comprising a left hand movable member 21, a right hand member 22 on which is fixed an inverted U-shaped stay cover 30 having a handle 23 which may be grasped by a user. A first joint 31 is provided on the U-shaped cover 30 remote

from the handle 23 so that a person's hand will not come in contact with the movable portion. To release the stay, the user presses a release button 24 which pushes against the release spring 25, moves away the retaining button 26 provided at the end of the release spring and moves the button out of engagement of an orifice 28 provided in the left hand stay 21.

The stays 20 are provided to keep the stretcher rigid while it is in use and to allow it to be folded by deliberate release action when not in use. In using the stay 20 the handle 23 and cover 30 keep the hand of the user well away from moving parts and has no sharp edges thereby reducing the risk of trapping and puncturing skin in a situation where infection and risk is high. The release button 24, release spring 25 and retaining button 26 provide a safety catch which prevents accidental release which allows positive disengagement when required by deliberate action. The folding stay 20 is manufactured in steel with black passivate zinc finish, but could also be plastic or Teflon (Trade Mark) coated.

The cover 21 of handle 1 is a custom designed bulb end handle profile for added security, available in a range of finishes - usually black grip finish PVC.

Two snap hook closures 50 allow the stretcher to be neatly stored and securely folded, with or without straps in use. They are in black acetal, but also can be in metal or other plastics material.

The carrying tubes 2 are extruded 6082 aluminium alloy poles for light weight and strength. The countersunk holes for fixings avoid any unnecessary protruding parts.

The feet 35 (see Figures 8 and 8a) are fabricated in steel designed for strength, low cost, low weight and are profiled underneath to aid stacking as shown in Figure 6. An integral nut 36 (which may be self clinching in production) allows easy removal/assembly for a cover change in the field by removal of four bolts 50. The stays 20 remain attached to the feet 35 to avoid loose parts.

The cover 4 is of inexpensive construction with multiple strap locations 52, allowing for location of straps 55 where needed and to avoid wounds, and also allowing the addition of extra straps where additional patient security is necessary, such as for mountain rescue. Removal of the four bolts 50 (which could be removed in the field by a coin) drop the feet 35 and stay assembly 20 for easy cover change.

It will of course be understood that the invention is not limited to the specific details described herein, which are given by way of example only, and that various modifications and alterations are possible within the scope of the invention as defined in the appended claims.

CLAIMS:

1. A folding or extendible stretcher convertible between one mode and another, the stretcher having at least one foldable joint (31) along its length forming part of a stay (20) provided between two relatively movable elements (21,22) of the stretcher and being operable to maintain the stretcher rigid about the joint (31), the stay (20) comprising a substantially inverted U-shaped cover (30) fixed to one of the movable elements (22), a handle (23) provided towards the apex of the inverted U (30) with the joint (31) being located remote from the handle (23) and means for releaseably connecting the cover (30) to the other movable element (21).

2. A stretcher as claimed in Claim 1 having a pair of telescopic handles (1) at one end at least of the stretcher, each handle being extendible from and retractable into a hollow stretcher member (2), the handle having retaining means (3,3a) on an inner face of the handle (1) and stretcher member (2) for securing the handle in one of a number of desired locations along the stretcher member (2), thereby reducing the possibility of accidental release by anchor straps or the like.

3. A stretcher as claimed in Claim 2 in which a keyway (14) and a guide element (15) engageable therewith are provided between the handle (1) and stretcher member (2) so as to prevent relative non-axial movement of the handle (1).

4. A stretcher as claimed in any one of the preceding claims including four removable feet (35) one adjacent each corner of the stretcher and a removable stretcher cover (4), whereby the feet are removable to allow the stretcher

cover to be removed.

5. A stretcher as claimed in Claim 4, in which the free ends of the relatively movable elements (21,22) remote from the joint (31) are each permanently pivotally engaged with a foot (35) to form a sub-assembly, with the feet (35) being removably engaged with the hollow stretcher members (2) by disengageable fastner elements (50), whereby disengagement of the fastner elements allows the removal of the sub-assembly from the members (2) to enable the cover (4) to be removed from the members (2).

6. A stretcher as claimed in Claim 4, in which the cover (4) is provided with a pair of sleeves (5) for accommodating the hollow stretcher members (2), and each sleeve is provided with a plurality of strap locating anchor elements (52).

7. A stretcher as claimed in Claim 6, in which the cover (4) is provided with at least one clip and hook arrangement which are engageable when the sleeves (5) are brought into juxtaposition so as to retain the stretcher in a folded mode.

8. A stretcher as claimed in Claim 4 in which each foot (35) is provided with a profiled surface for engagement with a member (2) of a like stretcher in a stacked arrangement.

9. A stretcher as claimed in any one of the preceding claims in which the releaseable connecting means comprises a spring biased detent (26) operable to engage one of the relatively movable elements (21), and a button (24) operable to release the detent (26) so as to allow relative movement of the two elements (20,21).

10. A stretcher as claimed in Claim 2 in which the retaining means comprising a spring loaded button (3) engageable in one of a number of orifices (3a) along the stretcher member (2), the button (3) and orifices (3a) being located on an inner face of the handle (1) and stretcher member (2).

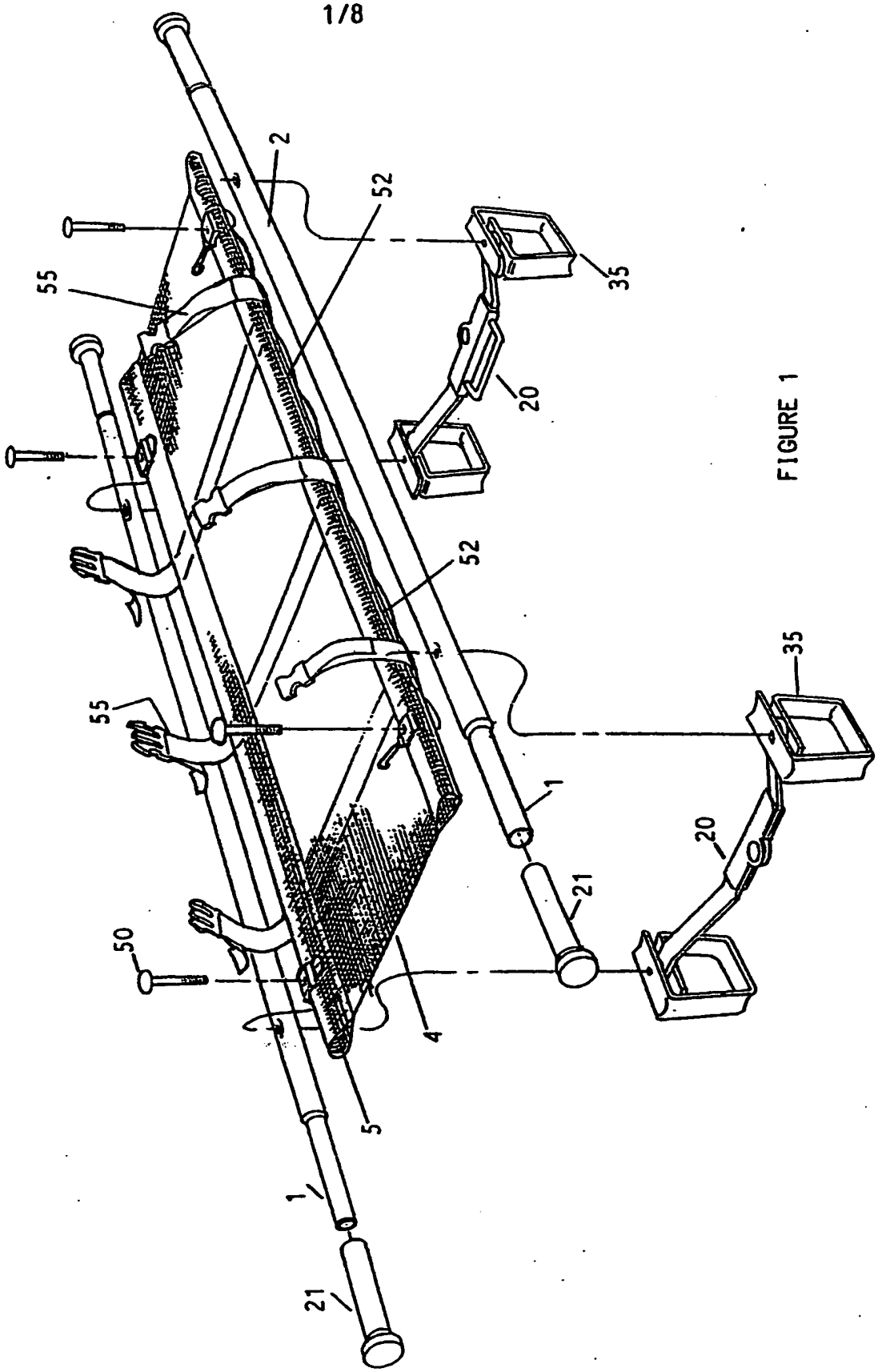

FIGURE 1

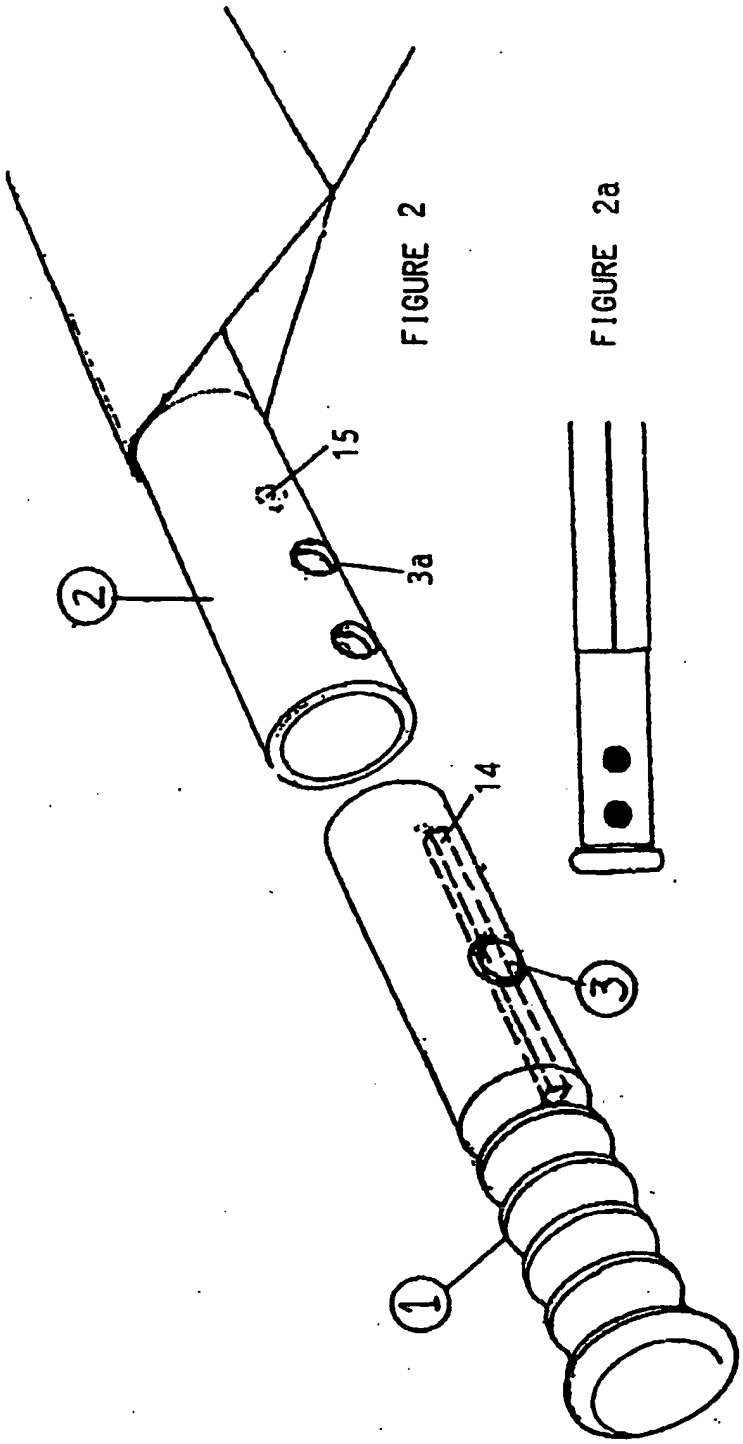

FIGURE 2

FIGURE 2a

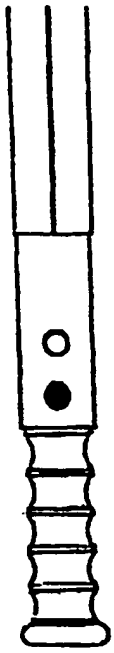

FIGURE 2b

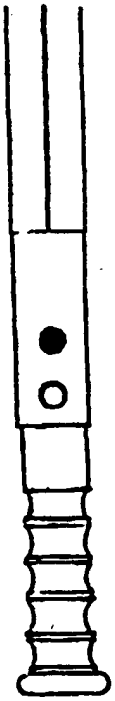

FIGURE 2c

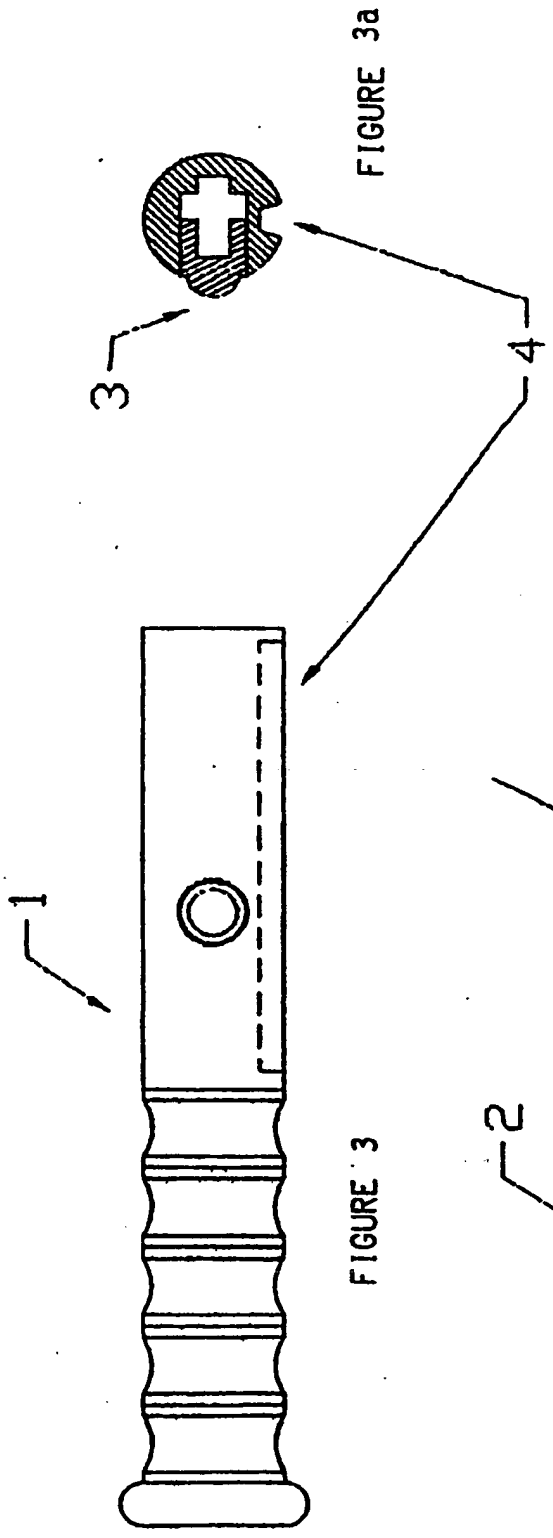

FIGURE 3a

FIGURE 3

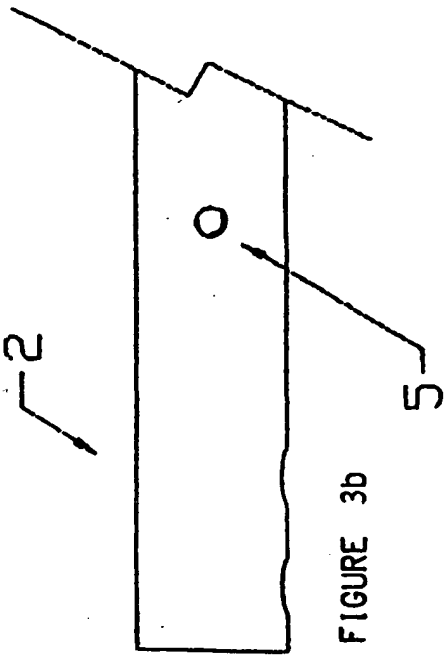

FIGURE 3b

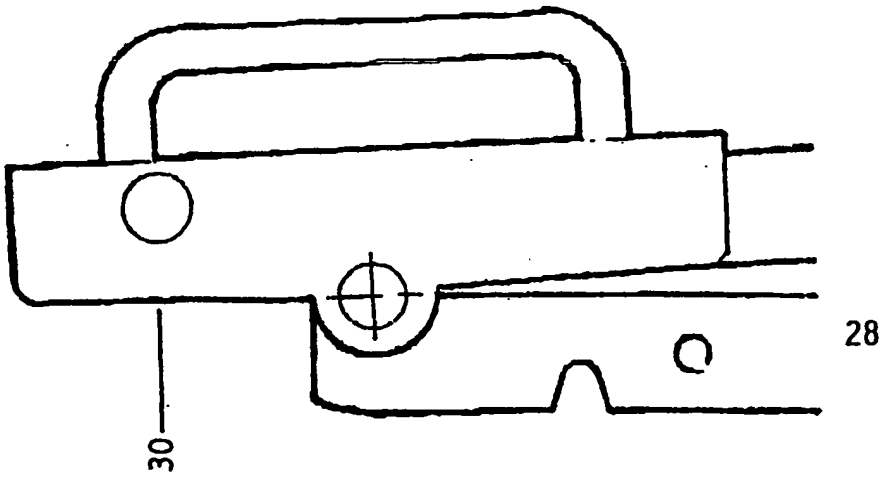

FIGURE 4a

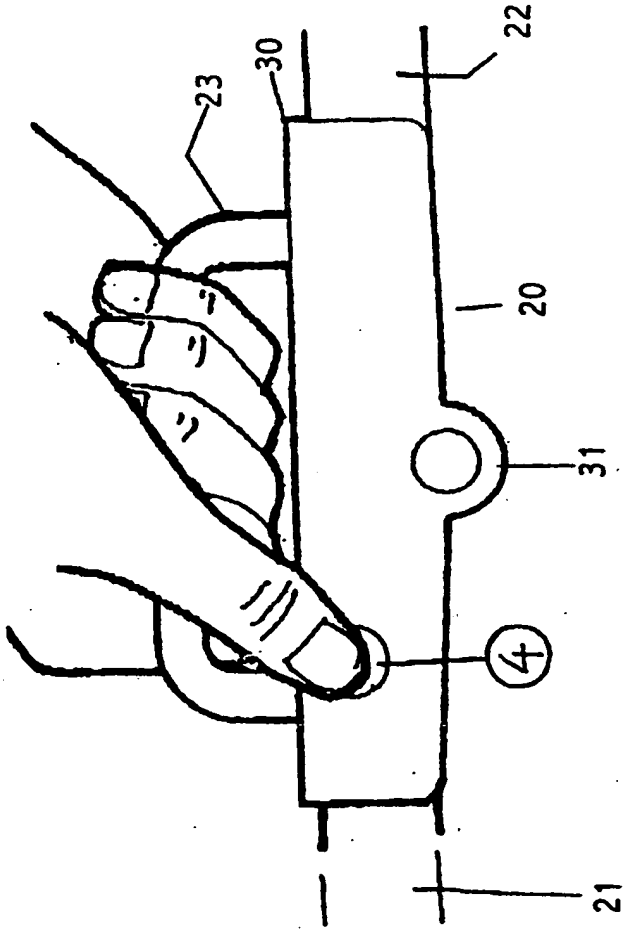

FIGURE 4

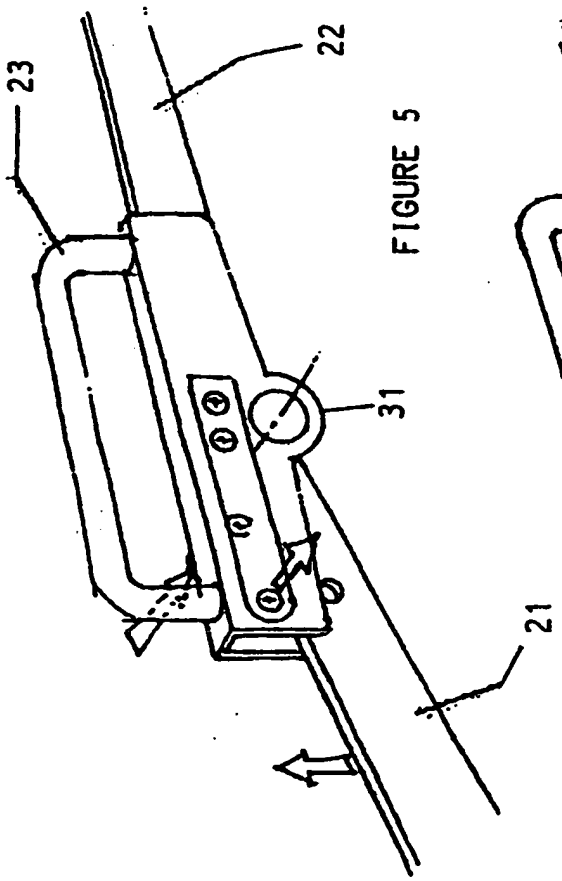

FIGURE 5

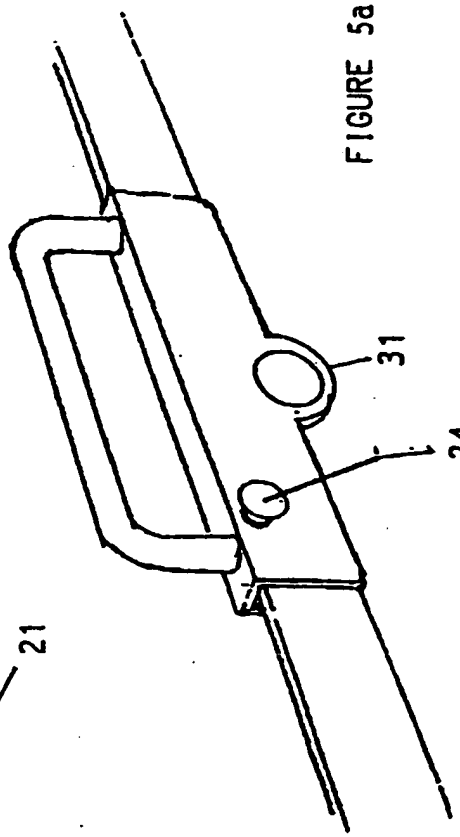

FIGURE 5a

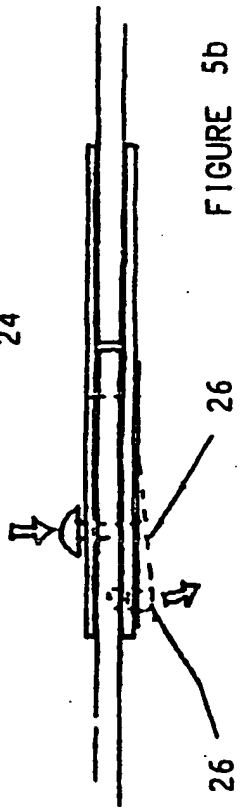

FIGURE 5b

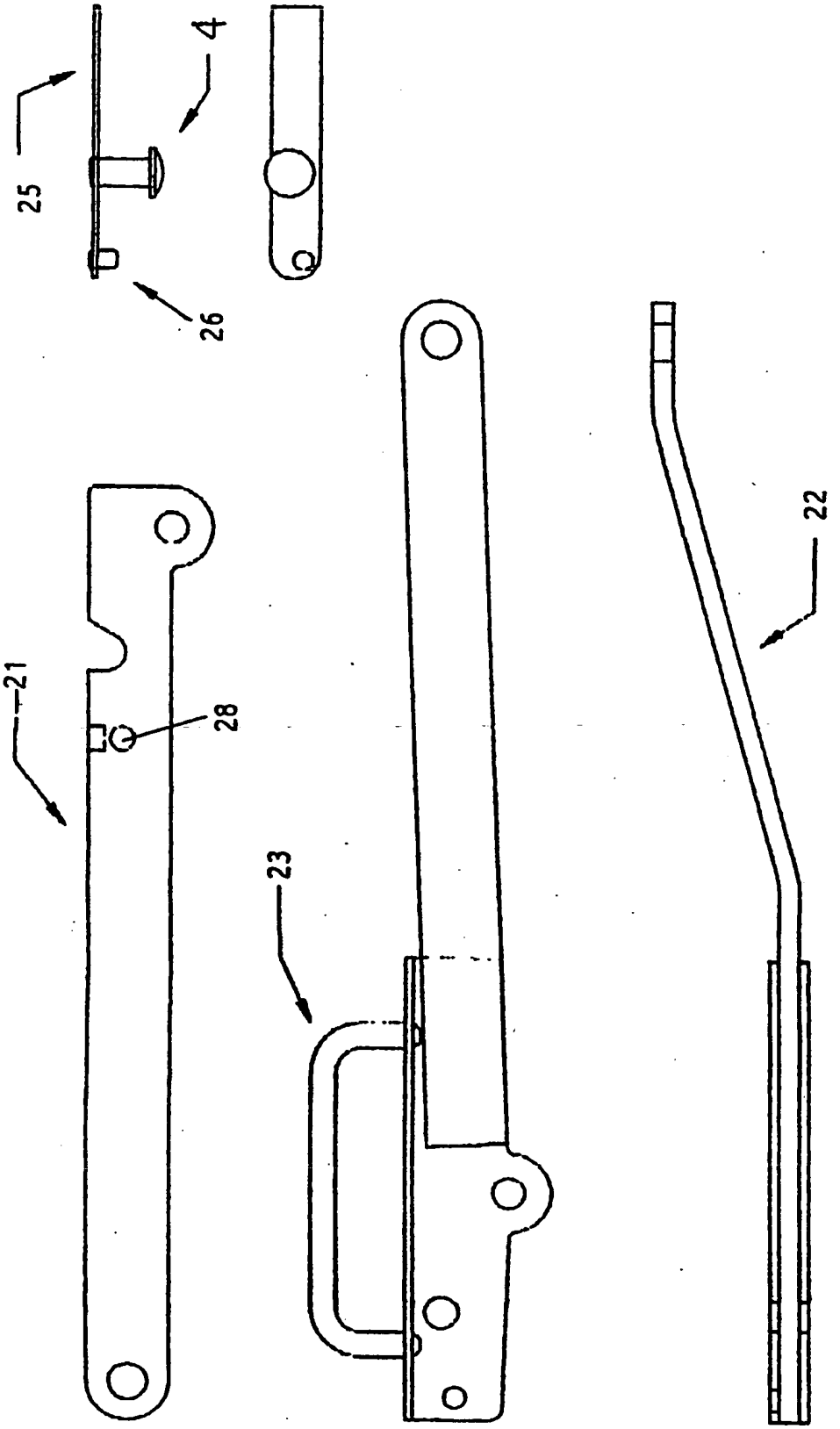

FIGURE 6

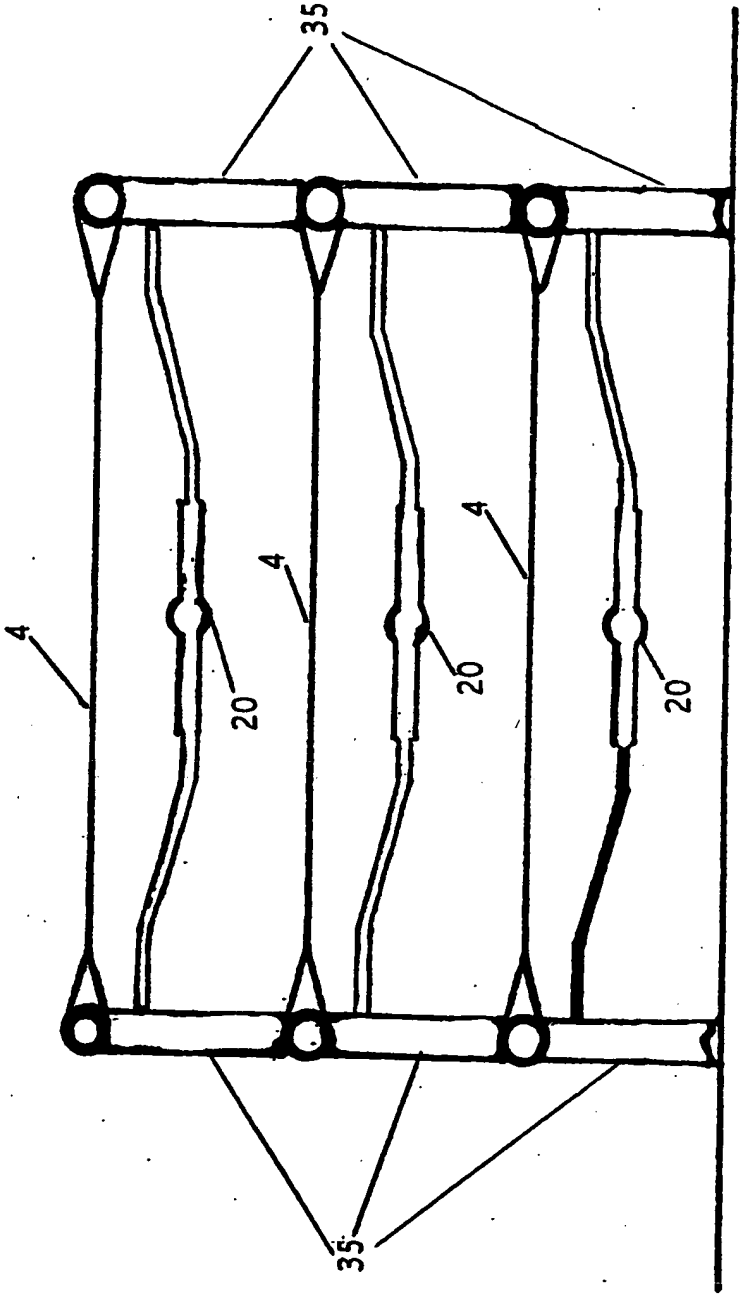

FIGURE 7

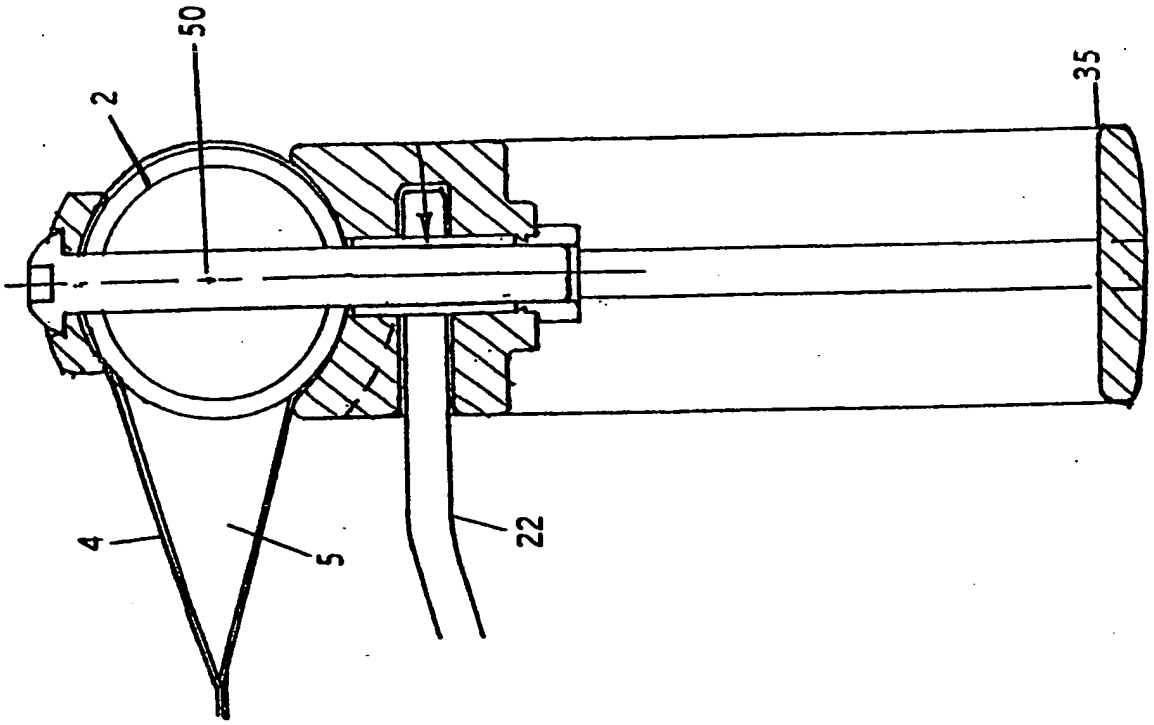

FIGURE 8a

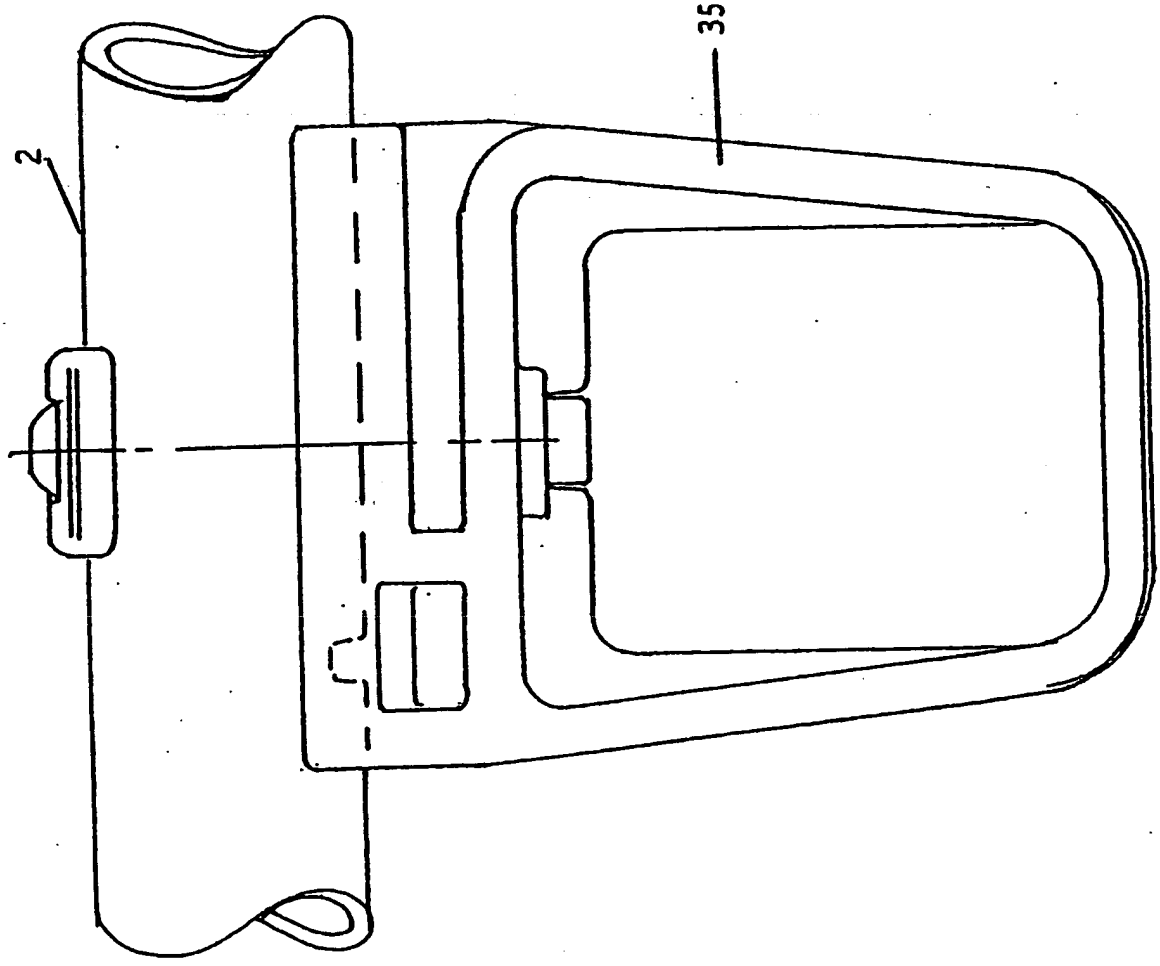

FIGURE 8

INTERNATIONAL SEARCH REPORT

Internatir \pplication No
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61G1/013

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A61G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US,A,3 104 401 (DAVIS) 24 September 1963 see column 3, line 15 - line 36; figures 3,22,23,25	1
Y A	EP,A,0 400 760 (DE BUCK) 5 December 1990 see the whole document	1 2-6,10
A	US,A,2 306 006 (THOMSON) 22 December 1942 see the whole document	1,4,5,8
A	US,A,2 455 027 (THOMSON) 30 November 1948 see the whole document	1,4,5
A	DE,A,32 45 842 (SCHUMANN) 14 June 1984 see the whole document	2,3,10
A	GB,A,726 352 (SEGCO , LTD.) 16 March 1955 see page 2, line 48 - line 62; figure 8	2,3

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
10 May 1995	19.05.95

Name and mailing address of the ISA	Authorized officer
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR,A,331 379 (BICART) 10 September 1903 see page 1, line 30 - line 52; figures	9

1

INTERNATIONAL SEARCH REPORT

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PCT/IE 95/00016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A-3104401	24-09-63	NONE	
EP-A-400760	05-12-90	NL-A- 8901396	02-01-91
US-A-2306006	22-12-42	NONE	
US-A-2455027	30-11-48	NONE	
DE-A-3245842	14-06-84	NONE	
GB-A-726352		NONE	
FR-A-331379		NONE	